

phones 20. The system 10a of FIG. 5 provides for low-cost distribution of a single live television program, thus allowing an airline to add this feature without installing a costly upgraded distribution system 14. This embodiment may be implemented in any in-flight distribution system 14 where a single program is presented on overhead monitors 19 mounted throughout the aircraft.

In the embodiment of FIG. 5, the receiver/decoder 13 outputs a single channel of live television which comprises one video output and one audio output. The receiver/decoder 13 receives the IF signal from the antenna interface unit 12, extracts the desired channel, decodes this data and generates baseband video and analog audio output signals. The decoding process that is employed depends upon the type of encoding that is used at the ground-based program source, which may be MPEG compression, for example.

Only a single-channel receiver/decoder 13 is required, since in this low-cost application, only one television program is shown at a time. The receiver/decoder 13 used in the system 10a disclosed with reference to FIG. 4 employs a rotary switch or other means to select one television channel. The baseband video and analog audio output signals from the receiver/decoder 13 are in the same format as those of the video tape player 25, for example, so that it is entirely compatible with the existing distribution system 14. Therefore, the satellite television system 10a can coexist with other video and audio sources on the aircraft, such as video and audio tape players, for example. The flight crew selects one of the video and audio sources since only one source can be displayed on the overhead monitors 19 at a given time.

Thus, satellite television systems that provide live television programming to passengers that is derived from direct broadcast satellites have been disclosed. It is to be understood that the described embodiments are merely illustrative of some of the many specific embodiments which represent applications of the principles of the present invention. Clearly, numerous and varied other arrangements may be readily devised by those skilled in the art without departing from the scope of the invention.

What is claimed is:

1. A satellite television system that provides live television programming to passengers on an aircraft derived from direct broadcast satellites, said system comprising:
 - a video and audio distribution system disposed on the aircraft for distributing video signals to the passengers on the aircraft;
 - an antenna that comprises steering means for steering the antenna toward the satellite in response to control signals supplied thereto;
 - antenna control means for providing the control signals to the antenna and for processing status signals derived from the antenna to steer the antenna so that it is locked onto RF signals transmitted by the satellite, and for downconverting the RF signals to provide left hand and right hand circularly polarized RF signals that correspond to a plurality of television channels; and
 - a receiver/decoder coupled to the antenna control means for processing the downconverted RF signals to provide video signals corresponding to the plurality of television channels, and for feeding back the status signals to the antenna control means which are used to steer the antenna to lock it onto the RF signals received from the satellite, and for outputting the video signals to the video and audio distribution system which distributes live television programming to the passengers.

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2. The system of claim 1 wherein the antenna control means comprises:

- an antenna controller coupled to the receiver/decoder for processing status signals derived therefrom; and
- an antenna interface unit coupled between the antenna and the receiver decoder for downconverting the RF signals to provide the left hand and right hand circularly polarized RF signals that contain different sets of television channels, and coupled between the antenna controller and the antenna for coupling the control and status signals therebetween.

3. The system of claim 2 wherein the antenna controller comprises:

- a controller;
- an RS485 interface coupled between the controller and the antenna interface unit for coupling the control and status signals to the controller; and
- an ARINC 429 interface coupled between the controller and a navigation system for coupling inertial reference signals provided by the navigation system to the controller which are used to generate steering signals that steer the antenna toward the satellite.

4. The system of claim 2 wherein the antenna interface unit comprises:

- a downconverter for downconverting the RF signals received from the antenna and for outputting the downconverted RF signals to the receiver/decoder;
- a servo controller coupled between the RS485 interface of the antenna controller and the antenna for processing antenna position signals to generate elevation motor drive signals that are supplied to the antenna, and for outputting azimuth control signals;
- a servo power amplifier coupled between the servo controller and the antenna for supplying power to the antenna, and for processing motor position control signals derived from the antenna and the azimuth control signals derived from the servo controller to generate azimuth motor drive signals that are supplied to the antenna.

5. The system of claim 1 wherein the receiver/decoder comprises:

- a passive mother board having first and second computer busses;
- a receiver/decoder card coupled to the first computer bus;
- a computer processor coupled to the first computer bus;
- a rotary switch coupled to the computer processor for selecting channels for viewing; and
- a flash disk card coupled to the second bus for storing video, audio and control signals.

6. A satellite television system that provides a single channel of live television programming to overhead monitors mounted throughout an aircraft derived from direct broadcast satellites, said system comprising:

- a video and audio distribution system disposed on the aircraft for distributing video signals to the passengers on the aircraft on overhead monitors mounted throughout the aircraft;
- an antenna that is disposed adjacent a surface of the aircraft and that comprises steering means for steering the antenna toward the satellite in response to control signals supplied thereto;
- antenna control means for providing the control signals to the antenna and for processing status signals derived from the antenna to steer the antenna so that it is locked

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onto RF signals transmitted by the satellite, and for downconverting the RF signals to provide left hand and right hand circularly polarized RF signals that correspond to a plurality of television channels; and

a receiver/decoder coupled to the antenna control means for processing the downconverted RF signals to provide video signals corresponding to the plurality of television channels, and for feeding back the status signals to the antenna control means which are used to steer the antenna to lock it onto the RF signals received from the satellite, and for outputting the video signals corresponding to a single television channel to the video and audio distribution system which distributes live television programming corresponding to the single television channel to the overhead monitors mounted throughout the aircraft.

7. The system of claim 6 wherein the antenna control means comprises:

an antenna controller coupled to the receiver/decoder for processing status signals derived therefrom; and

an antenna interface unit coupled between the antenna and the receiver decoder for downconverting the RF signals to provide the left hand and right hand circularly polarized RF signals that contain different sets of television channels, and coupled between the antenna controller and the antenna for coupling the control and status signals therebetween.

8. The system of claim 7 wherein the antenna controller comprises: a controller;

an RS485 interface coupled between the controller and the antenna interface unit for coupling the control and status signals to the controller; and

an ARINC 429 interface coupled between the controller and a navigation system for coupling inertial reference signals provided by the navigation system to the controller which are used to generate steering signals that steer the antenna toward the satellite.

9. The system of claim 8 wherein the antenna interface unit comprises:

a downconverter for downconverting the RF signals received from the antenna and for outputting the downconverted RF signals to the receiver/decoder;

a servo controller coupled between the RS485 interface of the antenna controller and the antenna for processing antenna position signals to generate elevation motor drive signals that are supplied to the antenna, and for outputting azimuth control signals;

a servo power amplifier coupled between the servo controller and the antenna for supplying power to the antenna, and for processing motor position control signals derived from the antenna and the azimuth control signals derived from the servo controller to generate azimuth motor drive signals that are supplied to the antenna.

10. The system of claim 6 wherein the receiver/decoder comprises:

a passive mother board having first and second computer busses;

a receiver/decoder card coupled to the first computer bus that decodes video signals corresponding to the single television channel;

a computer processor coupled to the first computer bus; and

a flash disk card coupled to the second bus for storing video, audio and control signals.

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11. A satellite television system that provides live television programming to passengers on an aircraft derived from direct broadcast satellites, said system comprising:

a video and audio distribution system disposed on the aircraft for distributing video signals to the passengers on the aircraft;

an antenna that comprises steering means for steering the antenna toward the satellite in response to control signals supplied thereto;

antenna control means comprising:

an antenna interface unit coupled to the antenna for downconverting RF signals to provide left hand and right hand circularly polarized RF signals that contain different sets of television channels; and

an antenna controller comprising a controller, an RS485 interface coupled between the controller and the antenna interface unit for coupling control signals to the antenna and for processing status signals derived from the antenna to steer the antenna so that it is locked onto RF signals transmitted by the satellite, and an ARINC 429 interface coupled between the controller and a navigation system for coupling inertial reference signals provided by the navigation system to the controller which are used to generate steering signals that steer the antenna toward the satellite; and

a receiver/decoder coupled to the antenna interface unit for processing the downconverted RF signals to provide video signals corresponding to the plurality of television channels, and for feeding back the status signals to the antenna controller which are used to steer the antenna to lock it onto the RF signals received from the satellite, and for outputting the video signals to the video and audio distribution system which distributes live television programming to the passengers.

12. The system of claim 11 wherein the antenna interface unit comprises:

a downconverter for downconverting the RF signals received from the antenna and for outputting the downconverted RF signals to the receiver/decoder;

a servo controller coupled between the RS485 interface of the antenna controller and the antenna for processing antenna position signals to generate elevation motor drive signals that are supplied to the antenna, and for outputting azimuth control signals;

a servo power amplifier coupled between the servo controller and the antenna for supplying power to the antenna, and for processing motor position control signals derived from the antenna and the azimuth control signals derived from the servo controller to generate azimuth motor drive signals that are supplied to the antenna.

13. A satellite television system that provides a single channel of live television programming to overhead monitors mounted throughout an aircraft derived from direct broadcast satellites, said system comprising:

a video and audio distribution system disposed on the aircraft for distributing video signals to the passengers on the aircraft on overhead monitors mounted throughout the aircraft;

an antenna that is disposed adjacent a surface of the aircraft and that comprises steering means for steering the antenna toward the satellite in response to control signals supplied thereto;

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antenna control means comprising:

- an antenna interface unit coupled to the antenna for downconverting RF signals to provide left hand and right hand circularly polarized RF signals that contain different sets of television channels; and
- an antenna controller comprising a controller, an RS485 interface coupled between the controller and the antenna interface unit for coupling control signals to the antenna and for processing status signals derived from the antenna to steer the antenna so that it is locked onto RF signals transmitted by the satellite, and an ARINC 429 interface coupled between the controller and a navigation system for coupling inertial reference signals provided by the navigation system to the controller which are used to generate steering signals that steer the antenna toward the satellite; and
- a receiver/decoder coupled to the antenna interface unit for processing the downconverted RF signals to provide video signals corresponding to the plurality of television channels, and for feeding back the status signals to the antenna controller which are used to steer the antenna to lock it onto the RF signals received from the satellite, and for outputting the video signals corresponding to a single television

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14. The system of claim 13 wherein the antenna interface unit comprises:

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--15. A satellite television system that provides television programming in real time to passengers on an aircraft derived from at least one satellite, said system comprising:

a video and audio signal distribution system disposed on the aircraft, the video and audio signal distribution system being configured to distribute video and audio signals to the passengers on the aircraft;

a steerable antenna that is capable of being steered towards the at least one satellite in response to control signals supplied thereto;

an antenna controller that is coupled to the steerable antenna, the antenna controller being configured to provide the control signals to the steerable antenna, to steer the steerable antenna so that the steerable antenna is locked onto RF signals transmitted by the at least one satellite, and to downconvert the RF signals to provide downconverted RF signals that correspond to a plurality of programming channels;
and

a receiver/decoder that is coupled to the antenna controller and to the video and audio signal distribution system, the antenna controller being configured to process the downconverted RF signals to provide video and audio signals corresponding to the plurality of programming channels, and to output the video and audio signals to the video and audio signal distribution system which distributes the plurality of programming channels in real time to the passengers.

16. The system of claim 15, wherein the downconverted RF signals correspond to left hand and right hand circularly polarized downconverted RF signals.

17. The system of claim 15, wherein the video and audio signal distribution system distributes video and audio television signals to the passengers.

18. The system of claim 15, wherein the antenna controller processes status signals derived from the steerable antenna to steer the steerable antenna.

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19. A satellite television system that provides television programming in real time to passengers on an aircraft derived from at least one satellite, said system comprising:

a video and audio signal distribution system disposed on the aircraft, the video and audio signal distribution system being configured to distribute video and audio signals to the passengers on the aircraft;

a steerable antenna that is capable of being steered towards the at least one satellite in response to control signals supplied thereto;

an antenna controller that is coupled to the steerable antenna, the antenna controller being configured to provide the control signals to the steerable antenna, to steer the steerable antenna so that the steerable antenna is locked onto RF signals transmitted by the at least one satellite;

a downconverter that is coupled to the antenna controller and that downconverts the RF signals to provide downconverted RF signals that correspond to a plurality of programming channels; and

a receiver/decoder that is coupled to the downconverter and to the video and audio signal distribution system, the receiver/decoder being configured to process the downconverted RF signals to provide video and audio signals corresponding to the plurality of programming channels, and to output the video and audio signals to the video and audio signal distribution system which distributes the plurality of programming channels in real time to the passengers.--

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